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# Biotechnology Notes

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**Biotechnology Notes**, a compilation of agency activities, news events, and upcoming meetings, is prepared for members of the U.S. Department of Agriculture's (USDA) Committee on Biotechnology in Agriculture (CBA) by USDA's Office of Agricultural Biotechnology (OAB).

## INSIDE USDA

### PLANT GENOME MAPS: A BLUEPRINT OF LIFE

A genome is the sum of all genes found in an individual plant or animal. It is the key to understanding how some plants survive without water or nutrients and others ward off certain insects and diseases. Until now, finding specific genes that affect these processes has been like looking for a needle in a haystack. Under a new USDA program, however, scientists may be able to use a map that locates sets of genes that relate directly to those genetic traits that are so important to agriculture.

The Agricultural Research Service (ARS) is serving as the lead agency in this national program to map plant genes. The new Office of Plant Genome Mapping Programs, under the direction of Jerome Miksche, will coordinate activities and serve as the focal point for mapping and sequencing plant genomes and identifying plant genes that confer desirable traits. Unlike the National Institute of Health's (NIH) mapping program that plans to identify all human genes, it is nearly impossible to catalogue the genome of all plants in the world. The corn plant alone has the same genome size as humans.

A coordinating committee co-chaired by Jerome Miksche, ARS, and Machi Dilworth of the Cooperative State Research Service (CSRS), is now being formed. The coordinating committee membership will be comprised of six program areas: Computer/data management; genetics/breeding; restriction fragment length polymorphisms/mapping/gene tagging group; molecular genetics; plant physiology and biochemistry; and biotechnology. The program will be coordinated with CSRS, other USDA agencies, the Office of Agricultural Biotechnology (OAB), the land-grant system, national laboratories, the National Science Foundation, NIH, private universities, and private industry.

The first meeting is scheduled to take place in several months. Topics on the agenda will include refining goals, establishing a timetable and operational plan, and flushing out those items that need data bases. Updates on this project will appear periodically in Biotechnology Notes. For more information on the gene mapping program, call Jerome Miksche at (301) 344-2029.

## **JUNE ABRAC MEETING CANCELLED; WORKING GROUP MEETING SCHEDULED**

Instead of the June 22-23 meeting of USDA's Agricultural Biotechnology Research Advisory Committee (ABRAC), an ABRAC working group on classifying organisms has been scheduled. The working group meeting is open to the public and will take place at USDA on June 22-23 in Room 104-A of the Administration Building.

The working group will include approximately six ABRAC members and alternates. Its task is to improve a section of the draft research guidelines dealing with examples and characteristics of unmodified organisms. For more details about the working group meeting, contact Alvin Young, ABRAC Executive Secretary, at (202) 447-9165.

## **GROWTH HORMONES COULD LOWER FOOD PRICES**

A recent report released by USDA's Economic Research Service (ERS) says current scientific evidence does not show any consumer safety or health risks associated with animal growth hormones. Rather, consumers are likely to benefit from slightly lower prices in the long run. The report, "Issues Raised by New Agricultural Technologies: Livestock Growth Hormones," examines the likely implications for the agricultural sector if or when animal growth hormones are commercially released. The authors, economists Fred Kuchler and John McClelland, found that contrary to earlier studies bovine and porcine growth hormone adoption is unlikely to have a large impact on trends already underway in agriculture, such as increased specialization and fewer but larger farms. To receive a copy of the report, call 1-800-999-6779.

## **NEW VIDEOTAPE AVAILABLE**

"Biotechnology: Challenges for Extension" is a new videotape prepared by the Cooperative Extension System for county agricultural agents. Available through the extension agricultural program leader and the communication and information specialist, the video includes a discussion of the basics of biotechnology, current applications, as well as an overview of ethical considerations. It is also designed to help the agent develop a plan for dealing with issues related to biotechnology and may be used to introduce the topic to county advisory committees.

## **APHIS SCHEDULES BIOTECH MEETING WITH STATES**

Recognizing the interest by states in biotechnology oversight, the Animal and Plant Health Inspection Service (APHIS) has scheduled a conference, "Federal and State Regulation of Biotechnology: Plants and Microorganisms," for June 25-28 at Research Triangle Park, N.C. Panelists from USDA regulatory and research agencies will discuss issues important to state decisionmakers. For more information, call Shirley Ingebritsen at (301) 436-7602.

## **SHARE AND SHARE ALIKE**

Folks at the Forest Service's (FS) Northeastern Forest Experiment Station, Delaware, Ohio, have the right idea. They want to pass the word that their high-tech



biotechnology lab, state-of-the-art equipment, and highly trained personnel are available to all researchers in the FS and other USDA agencies. Some of their instruments include the ABI 477A protein sequencer, the ABI 370A DNA sequencer, and the ABI 381A DNA synthesizer. They also have a well-equipped facility for generation, production, and characterization of monoclonal antibodies. A staff of molecular biologists, virologists, protein chemists, and microbiologists will be glad to share its expertise, by mail or phone, in the synthesis of oligonucleotides, sequencing of proteins, sequencing of nucleic acids, and other techniques. The facilities are also available for scientists to visit and learn first-hand about recombinant DNA/monoclonal antibody techniques.

Acting project leader Shivanand Hiremath, or Dr. Shiv for short, says he believes such interaction among units is "mutually beneficial and will lead to more productivity in research." For more information, interested researchers may call Dr. Shiv at (614) 369-4476 .

#### USDA BRIEFS FEDERAL COMMITTEE

On May 10 the OAB brought members of the Biotechnology Science Coordinating Committee (BSCC) up-to-date on several significant biotechnology initiatives at USDA. The BSCC is charged with coordinating Federal biotechnology policy. Former Assistant Secretary for Science and Education, Orville Bentley, arranged the opportunity for OAB to discuss the proposed research guidelines and the National Biological Impact Assessment Program. Terry Medley, Director of APHIS's Biotechnology, Biology, and Environmental Protection unit, represented Kenneth Gilles, former Assistant Secretary for Marketing and Inspection Service.

#### AROUND THE NATION (AND THE WORLD)

##### NORTH CAROLINA INTRODUCES BIOTECH LEGISLATION

Now pending before the North Carolina General Assembly is a bill that would create a Board in the North Carolina Department of Agriculture with regulatory authority over environmental releases of genetically engineered organisms. The legislation would provide North Carolina with the legal authority and scientific expertise to act as a responsible partner in the Federal regulatory process. All permit processes and forms would be consistent with the Federal system, and the issuance of many state permits would be based on Federal review and approval. The proposed legislation was recommended by the North Carolina Advisory Committee on Biotechnology in Agriculture.

##### . . . MORE BILLS IN PIPELINE

North Carolina's bill is one of 51 either pending or enacted in 24 states, according to a new report prepared by the Industrial Biotechnology Association (IBA). Five of the 51 bills have been enacted, all in March of this year. According to IBA president Richard Godown, "The majority of legislation is positive and supportive of biotechnology, not overly regulatory or restrictive." The IBA report, "State Govern-

ment Legislation on Biotechnology" is the first of quarterly surveys on state biotech legislation to be released by the IBA. Copies of the survey may be obtained by calling Sherrod Shim, Director of Communications at the IBA, on (202) 857-0244.

## THE MAKING OF A SCIENCE ADVISOR

In the April 1989 issue of the American Industrial Health Council Quarterly, Alvin Young, director of USDA's Office of Agricultural Biotechnology (OAB) discusses the role of the President's Science Advisor. "The Presidential Science Advisor works with all parts of government, carrying the message of the importance of science to the highest levels and eventually to the President," says Young. In addition to being knowledgeable about current scientific issues, he says the advisor, who is also the Director of the Office of Science and Technology Policy (OSTP), should be adroit at fostering good relations between the science office and the Office of Management and Budget (OMB). "OMB plays a paramount role in establishing national policy through its budgetary review authority, and that is why it's absolutely critical for the OSTP director to know when and where to impact in the budget cycle in order to ensure the availability of funds for scientific work."

Young, a former senior policy analyst at OSTP before joining USDA, also stressed the importance of the science advisor staying in close touch with agency heads and their senior staff, as well as the national scientific community.

## AN ECOLOGICAL PERSPECTIVE

The Ecological Society of America recently published in Ecology its report on the release into the environment of genetically engineered organisms. The Society supports the use of biotechnology to develop products and says that with careful design of transgenic organisms, planning, and regulatory oversight, the release of transgenic organisms "can be carried out with minimal ecological risk." The report also says regulatory oversight should focus on the biological properties of the products rather than the process used to produce them. Risk assessments should include the characteristics of the engineered trait, the parent organism, and the environment. The report recommends international coordination of both risk assessment and regulation, with special concern for protecting rare genetic resources such as the wild ancestors of domesticated species and threatened gene pools of other wild species. The report offers a preliminary set of specific criteria for the scaling of regulatory oversight.

Those interested in reading the entire article should refer to Ecology, Volume 70, No. 2, April 1989, pages 298-315; or order reprints from D. R. Strong Jr., Special Features Editor, Department of Biological Sciences, the Florida State University, Tallahassee, Fla. 32306.

## PSEUDORABIES VACCINE SUIT

Upjohn brought a patent infringement lawsuit against Syntro's first product, a recombinant live virus vaccine, according to the April 1989 issue of Genetic Technology News. The patent covers a mutant virus lacking glycoprotein. Upjohn received the patent last March. USDA issued Syntro a product license to market the vaccine last year.



## TURN ON AND TUNE IN

Prepare to learn more about biotechnology June 14 and 15, 11 a.m. to 5 p.m. Eastern time, as the Maryland Biotechnology Institute broadcasts by nationwide satellite a live symposium. "Biotechnology: Patents, Regulations and Public Issues" will feature a keynote address by Sen. Albert Gore who will speak on the current status of regulations in Congress and potential future legislation. Other topics on the show include a workshop on patents, an examination of public acceptance issues, and an overview of the regulatory approval process at the Food and Drug Administration, the USDA, and the Environmental Protection Agency (EPA). Congressman George Brown, Jr. concludes the broadcast with remarks on congressional attitudes toward the biotechnology industry. For information about fees and locations, call (301) 454-8955.

### IN CASE YOU WEREN'T THERE

- "Maintaining the Competitive Edge in Food Biotechnology" was the topic of a symposium held April 3-4 in Arlington, Va. and sponsored by the Institute of Food Technologists and the Society for Microbiology. John Lee, ERS Administrator, presented a paper he co-authored with John Reilly, ERS Deputy Director, Resources and Technology Division. They concluded that although the use of biotechnology is likely to be pervasive in the food industry, the effects will be felt gradually. Currently, 41 percent of private research and development activities are in the livestock area, 36 percent in crops, and 23 percent in food processing. The authors also stated that biotechnology is extremely diverse and offers opportunities to reduce consumer health risks and improve food quality while posing new risks and concerns. For example, while some technologies may reduce the need for pesticides or improve the flavor of fruits and vegetables, in some cases the level of naturally occurring components of foods can be inadvertently increased to levels that have detrimental effects on human health.
- Richard Godown, president of the IBA, spoke about current regulatory concerns at the European Forum on the Risk Management of Biotechnology, April 26, in Grenoble, France. He said the time has arrived for certain broad classes of research to be exempted from regulations, based on the scientific data that has accumulated from research and field experiments. To continue to regulate certain classes of research, said Godown, would be to "institutionalize a rigid oversight system" and hinder innovation and product development. Godown added that regulatory decisions should be made in the full context of the benefits products have to offer, as well as their risk.
- Animal feed and human food issues for genetically engineered plants was the focus of the conference, "Genetically Engineered Plants: Scientific Issues in Their Regulation for Animal Feed and Human Food Uses", held at the Boyce Thompson Institute for Plant Research, Cornell University, May 1-3, in Ithaca, N.Y. After a day and a half of presentations, participants broke into four workshops.
- On May 8, John McClelland, research economist at the ERS, briefed a Chinese delegation on prospects for adopting various biotechnology products in this country and the impact these products could have on U.S. agricultural production. The delegation visited the United States to learn about new technologies in agriculture.

- The first international congress and exhibition on environmental information, communication, and technology transfer took place May 16-19 in Bayreuth, West Germany. Billed as "Ecoinforma '89", the congress drew 160 scientists, economists, and government policymakers from around the world. Representing USDA were Maryln Cordle and Jean Larson. Cordle, who chaired the session on biotechnology, gave a presentation covering USDA's research guidelines, private and publicly funded research in the United States, and the need for international cooperation in setting standards and furthering ecological research. Larson spoke about the National Biological Impact Assessment Program and the development of databases for field safety reviews. This meeting also marked the international debut of USDA's new photographic exhibit on biotechnology.

- "Food for the World Through Biotechnology" was the topic at the IBA's mid-year meeting, May 17-19, in Chicago, Ill. OAB director Alvin Young, presented the keynote address. He discussed the status of the Technology Transfer Act of 1986 in which scientists at USDA's ARS collaborate with the private sector to develop and commercialize products, while ensuring the private firm receives patenting rights. Since the Act was passed, there have been 71 technology transfers and another 30 are pending.

Young also discussed the coordination of USDA's biotechnology activities including the number and types of permits the Department has issued since the biotechnology regulations became effective almost 2 years ago, and promising areas of biotechnology research that will have a direct impact on farmers, producers, and consumers.

A regulatory panel that included Arnold Foudin of APHIS discussed environmental releases and other current issues. Other topics on the agenda included the economic impact of biotechnology, new product developments, and patent and food safety issues. John Moore, EPA's acting deputy administrator, gave the keynote address on the second day of the meeting.

#### NEW PUBLICATIONS

Biocatalysis in Agricultural Biotechnology. John Whitaker and Philip Sonnet, Editors. ACS Symposium Series No. 389. 1989. \$84.95. To order, call 800-227-5558.

Biotechnology for Crop Protection. Paul Hedin, Julius Menn, and Robert Hollingworth, Editors. ACS Symposium Series No. 379. 1988. \$89.95. To order, call 800-227-5558.

The Impact of Biotechnology on Plant Agriculture: An Assessment of Worldwide Market Opportunities in the Grain, Fruit, Vegetable, Sugar, Oilseed, and Animal Feed Industries. November 1987. Published by Technology Management Group, New Haven, Conn. \$3,450. Additional copies, \$165. To order, call (203) 786-5445.

The Impact of Chemistry on Biotechnology: Multidisciplinary Discussions. Marshall Phillips, Sharon Shoemaker, Roger Middlekauff, and Raphael Ottenbrite, Editors. ACS Symposium Series No. 362. 1987. \$79.95. To order, call 800-227-5558.

The Language of Biotechnology: A Dictionary of Terms, by John Walker and Michael Cox. 1988. \$39.95 (paperbound). To order, call 800-227-5558.



Good Laboratory Practices: An Agrochemical Perspective. Willa Garner and Maureen Barge, Editors. ACS Symposium Series No. 369. 1988. \$39.95. To order, call 800-227-5558.

"Ag Biotech News and Information". A new bimonthly journal published by CAB International, formerly the Commonwealth Agricultural Bureaux. \$375 per year. Special rates available. Call either 800-528-4841 or 602-621-7897 for details.

"New Developments in Biotechnology: Patenting Life -- Special Report", prepared by the Office of Technology Assessment, the analytical arm of the U.S. Congress. Copies available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402-9325, or call (202) 783-3238. The GPO stock number is 052-003-01137-9. The price is \$8.50 per copy.

"The Directory of Biotechnology Centers," prepared by the North Carolina Biotechnology Center's Biotechnology Information Division. 1989. Provides information on 51 centers and 18 university groups in 31 states. Copies are free to non-profit groups; \$10 to others. Call Dina Murray at (919) 541-9366.

Three new publications from the Center for Science Information, a San Francisco-based non-profit organization:

BriefBook: Biotechnology, Microbes and the Environment. \$17.50

BriefBook: Biotechnology and Genetic Diversity. \$12.50

QuickBook: Genetic Engineering of Plants. \$9.50

To order, call (415) 553-8772.

#### UPCOMING MEETINGS

June 11-14: 40th Annual Meeting of the Tissue Culture Association. Orlando, Fla. Contact the Tissue Culture Association, Business Office, 19110 Montgomery Village Ave., Suite 300, Gaithersburg, Md. 20879.

June 12-14: 4th European Conference on Industrial Biotechnology. Varese, Italy. Contact Sergio Merli, Farmitalia Carlo Erba, Via Dei Gracchi, 35-20146, Milan, Italy.

June 22-23: Meeting of USDA's ABRAC cancelled. Meeting of an ABRAC working group scheduled for same date. The meeting will focus on the classification of organisms in the table of examples in the draft research guidelines. Open to the public. USDA, Room 104-A, Administration Bldg., 14th and Independence, Ave., S.W. 20250. For details, call Alvin Young, ABRAC Executive Secretary, (202) 447-9165.

June 22-25: 1989 American Society for Microbiology Conference on Biotechnology. Orlando, Fla. Sponsored by USDA. Contact Richard Bray at (202) 833-9680.

June 25-28: Second Symposium on the Genetic Engineering of Animals. Ithaca, N.Y. Sponsored by the Cornell University Biotechnology Program. For details, call (607) 255-4665.

June 25-28: Federal and State Regulation of Biotechnology: Plants and Microorganisms. Research Triangle Park, N.C. Sponsored by USDA's APHIS. For details, call Shirley Ingebritsen at (301) 436-7602.

June 25-30: Progress in Recombinant DNA Technology and Applications. St. Charles, Mo. Contact Washington University, Campus Box 1198, St. Louis, Mo. 63130.

June 25-30: Fifth International Symposium, World Association of Veterinary Laboratory Diagnosticians. Guelph, Canada. Call A. A. vanDreumel at (519) 823-8800.

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July 2-7: World Association of Veterinary Food Hygienists, Tenth (Jubilee) International Symposium. Stockholm, Sweden. For details, call Ronald Engel at (202) 447-2326.

July 5-7: Beijing International Conference on Biotechnology. Beijing, China. For details, write to Secretariat, Beijing International Conference on Biotechnology, Chinese Society for Microbiology, Zhongguancun, Haidan 100080, Beijing, China.

July 17-30: International Course on Plant Biotechnology. Madrid, Spain. Write to Ana Vazquez, Departamento de Genetica, Facultad de Ciencias Biologicas, Universidad Complutense de Madrid, 28040 Madrid, Spain.

July 20: "Overview of Biotechnology Environment Release Issues." Rockville, Md. Featured speaker is Edward Korwek, lawyer/scientist with Hogan & Hartson and member of USDA's ABRAC. Rockville, Md. Sponsored by Montgomery County, Maryland's High Technology Council, Inc. For details, call the Council at (301) 762-6325.

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Biotechnology Notes is written by Marti Asner, a public affairs specialist in USDA's Office of Agricultural Biotechnology. Suggestions for items to include in future issues are always appreciated and may be sent to: USDA/OAB, 14th and Independence Ave., S.W., Room 321-A, Administration Bldg., Washington, D.C. 20250; or phone (202) 447-9168; FAX: (202) 447-6488.